

## **Polypyrrole-based thin films with ZnO for smart window applications**

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The aim of this work is to obtain stable Polypyrrole (Ppy) films doped with ZnO on FTO substrate by electrochemical method. The dip-coating involves a slow hydrolyses process, the band gap and transmittance characteristics depending on the number of TiO<sub>2</sub> layers deposited. The optimum number of dip-coating cycles requested to obtain a stable and adherent TiO<sub>2</sub> film on FTO substrate with best optical properties are established. From UV-VIS spectra, the optical properties of deposited thin TiO<sub>2</sub> film are evaluated as following: thickness, band gap and transmittance. These properties are correlated with the morphological aspects achieved by AFM method and contact angle measurement. Also, the electrochemical stability of the TiO<sub>2</sub>nanostucture/FTO electrodes are evaluated using chronoamperometry and Cycle Voltammetry techniques. All the results showed that the optimum electrical and optical properties of TiO<sub>2</sub>/FTO electrodes are obtained as a function of dip-coating cycles, these electrodes being good candidates for developed new cathode electrodes for smart windows application.

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